

Appln No. 10/724,382
Amdt date October 23, 2006
Reply to Office action of June 22, 2006

REMARKS/ARGUMENTS

Claims 1-33 remain in the present application, of which claims 1, 11, 16, 19, 24 and 30 are independent. Claims 1, 11, 16, 19, 24 and 30 are amended herein. None of the claims is cancelled. Applicants thank the Examiner for the thorough review of the application and also for indicating that claims 16-23 include allowable subject matter. Applicants respectfully request reconsideration and allowance of claims 1-15 and 24-33 in addition to allowing the allowable claims 16-23 that are now in an allowable form.

I. Information Disclosure Statement (IDS) mailed June 6, 2006

While reviewing the case file to respond to the June 22, 2006 Office Action, Applicants noticed that there is no indication that the Examiner has considered the reference cited in Form PTO/SB/08A/B submitted with IDS via mail on June 6, 2006. A copy of the previously submitted IDS and the Form PTO/SB/08A/B is enclosed herewith. No fee is due because the IDS was mailed before the issuance of the first Office Action. Further, a copy of the cited reference is not enclosed as it is a U.S. patent. Applicants respectfully request that the reference cited in the Form PTO/SB/08A/B be considered by the Examiner, if it was not already considered. Further, Applicants request that a signed and initialed copy of the Form PTO/SB/08A/B be entered in the application file and also returned to Applicants with the next communication from the Patent Office.

II. Allowable Claims 16-23

Claims 16-23 were objected to as being dependent upon a rejected base claim. However, the Examiner has indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 16 and 19 have been rewritten in independent form to include all terms and limitations of the base claim 11. Therefore, Applicants request that the objection to claims 16 and 19 be withdrawn and that they be allowed. Since claims 17-18 and 20-23 now depend, directly or indirectly, from independent

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claim 16 or 19, Applicants request that the objection to these claims be withdrawn and that they be allowed without rewriting them in independent form.

III. Rejection of Claims 1, 3 and 9-10 under 35 U.S.C. § 103(a)

Claims 1, 3 and 9-10 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,452,717 ("Branigan et al.") alone or further in view of U.S. Patent No. 5,152,293 ("Vonesh et al.").

Claim 1 recites:

A probe assembly comprising:
a sensor assembly; and
a housing for mounting the sensor assembly, the housing having a
finger mountable portion such that the probe assembly can be worn on a finger by
a user, and comprising:
an inner housing; and
an outer housing for holding the inner housing and the
sensor assembly,
wherein the housing has been sealed such that moisture cannot
enter between the inner housing and the outer housing during sterilization of the
probe assembly after use. (Emphasis Added)

In rejecting claims 1, 3 and 9-10 over Branigan et al. alone or further in view of Vonesh et al., the Examiner contends "[s]ince the inner housing support 52 is separately sterilizable after each use while the cot is disposable, see col. 10 top, the inference is that the cot is separately sterilized. However, it would have been inherently obvious to provide sufficient resulting sealant moisture proofing between the two since the intrinsic purpose of the finger cot is that of a barrier."

In order to establish a *prima facie* case of obviousness, however, the following three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. See MPEP § 2142.

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In the above cited section of the Office Action, the Examiner appears to equate the backing 52 and the finger cot 54 in FIG. 14 of Branigan et al. with the inner and outer housings of claim 1. Here, while the Examiner on one hand concedes that "the inner housing support 52 is separately sterilizable after each use while the cot is disposable," on the other hand contends that "it would have been inherently obvious to provide sufficient resulting sealant moisture proofing between the two." However, since the cot (54) is disposable, it presumably is not sterilized after use and there would be no moisture proofing between the backing 52 and the finger cot 54 (which is disposed/discarded after use) during sterilization after use. Therefore, Branigan et al. does not teach or suggest maintaining any type of moisture proofing between the backing 52 and the finger cot 54 during sterilization after use.

In fact, Branigan et al. appears to even teach away from such moisture proofing during sterilization because it specifically teaches that "[t]he finger cot 54 can then be disposed, and the sensor can be sterilized and later reused with a new finger cot 54." Here, Branigan et al. specifically teaches discarding the finger cot 54 and using a new one, such that it cannot possibly be construed as teaching any kind of moisture proofing the backing 52 and the finger cot 54 during sterilization after use. As such, Branigan et al. does not teach or suggest that "the housing has been sealed such that moisture cannot enter between the inner housing and the outer housing during sterilization of the probe assembly after use."

The Examiner further contends "Vonesh et al on the other hand evidences in col. 5 [lines] 29-31 that finger cot type sensors are also conventionally gas-sterilizable, under which procedure the threshold for moisture barrier formation is significantly lower than for example for an immersion type process. The fingercot portion is wearable on the very fingertip per fig. 6 prior to any folding of 52 against the finger body."

However, passage of Vonesh et al. cited by the Examiner, namely, Col. 5, lines 29-31, merely recites ". . . sterilization may be achieved by ethylene oxide gasing following fabrication and packaging," and does not even hint or suggest moisture proof sealing for sterilization after use. Further, Vonesh et al. recites in Col. 5, lines 31-34, "[t]he probe, which is separable from the catheter following use of the device, is therefore a relatively inexpensive, disposable item

that may be discarded after a single use." As such, Vonesh et al. clearly teaches that the probe is disposable after a single use. Hence, Applicants submit that Vonesh et al. also fails to teach or suggest, and appears to be even teaching away from that "the housing has been sealed such that moisture cannot enter between the inner housing and the outer housing during sterilization of the probe assembly after use."

Since Branigan et al. and Vonesh et al. together fail to teach or suggest at least one limitation of claim 1, a *prima facie* case of obviousness cannot be established for claim 1 over Branigan et al. and Vonesh et al. Branigan et al. and Vonesh et al. even appear to teach away from claim 1 by teaching discarding "finger cot 54" (in the case of Branigan et al.) or "the probe" (in the case of Vonesh et al.). Therefore, there also is no motivation or suggestion to modify the references to practice claim 1. Therefore, Applicants request that the rejection of claim 1 over Branigan et al. and/or Vonesh et al. be withdrawn.

Since claims 3 and 9-10 depend from claim 1, they each incorporate all the terms and limitations of claim 1 in addition to other limitations, which together further patentably distinguish them over the cited references. Therefore, Applicants request that the rejection of claims 3 and 9-10 over Branigan et al. and Vonesh et al. be withdrawn as well.

IV. Rejection of Claims 1-3 and 9-10 under 35 U.S.C. § 103(a)

Claims 1-3 and 9-10 were rejected as allegedly being unpatentable over U.S. Patent No. 5,088,500 ("Wedel et al.") in view of Vonesh et al., alone or further in view of U.S. Patent No. 5,413,107 ("Oakley et al.").

In rejecting these claims, the Examiner contends that "Wedel et al is applied in a fashion paralleling the rejection immediately above, namely, since Wedel et al finger probe housing 102 is surrounded by a complete rubber glove per col. 3 lines 22-24." However, Col. 3, lines 22-24 of Wedel et al. merely recites "[t]ypically a sterile Latex sheath or rubber glove or the like (not shown) is then pulled over the finger and probe 100 combination." As such, this passage discusses wearing a sterile Latex sheath or rubber glove during use. Applicants do not see how this is relevant to "the housing has been sealed such that moisture cannot enter between the inner

housing and the outer housing during sterilization of the probe assembly after use" of claim 1. Wedel et al. simply does not teach or suggest this limitation.

Further, as discussed above, Vonesh et al. also does not teach or suggest "the housing has been sealed such that moisture cannot enter between the inner housing and the outer housing during sterilization of the probe assembly after use." As per Oakley et al., the Examiner merely refers to this reference without providing any specific reason for citing this reference. Applicants respectfully request that the Examiner provide some guidance as to which portions of Oakley et al. teaches or suggests which limitations of claim 1 if the rejection of claim 1 is to be maintained.

Since Wedel et al. and Vonesh et al. do not disclose at least one limitation of claim 1, and the Examiner does not even discuss Oakley et al., a *prima facie* case of obviousness for claim 1 was not established by the Examiner in the Office Action. Therefore, Applicants request that the rejection of claim 1 be withdrawn and that it be allowed.

Since claims 2-3 and 9-10 depend from claim 1, they each incorporate all the terms and limitations of claim 1 in addition to other limitation, which together further patentably distinguish them over the cited references. Therefore, Applicants request that the rejection of claims 2-3 and 9-10 over Wedel et al. in view of Vonesh et al. and/or Oakley et al. be withdrawn and that they be allowed.

V. Rejection of Claims 4-6 under 35 U.S.C. § 103(a)

Claims 4-6 were rejected as allegedly being unpatentable over Branigan et al. or Wedel et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,671,531 ("Al-Ali et al."). Al-Ali et al. is cited herein allegedly because it is "directed to a fingertip sensor of the Branigan et al. finger measuring type evidences that a flex circuit having [conventional] metal conductors may be made bendable about the finger as in Fig. 2B and having wing and shoulder strain relieving portions as per Fig. 3 would have been well-known as a remote connection means to a fingertip transducer, the flex circuit language appearing in the col. 9 line 46-53 discussion therein." However, Al-Ali et al. does not cure the deficiencies of Branigan et al. and/or Wedel et

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al. to reject claim 1. Therefore, claim 1 is patentably distinguishable over Branigan et al. and/or Wedel et al. in view of Al-Ali et al.

Since claims 4-6 depend, directly or indirectly, from claim 1, they each incorporate all the terms and limitations of claim 1 in additions to other limitations, which together further patentably distinguish these claims over the cited references. Therefore, Applicants request that the rejection of claims 4-6 be withdrawn and that they be allowed.

VI. Rejection of Claims 7, 11-15 and 24-33 under 35 U.S.C. § 103(a)

Claims 7, 11-15 and 24-33 were rejected under 35 U.S.C. § 103(a) allegedly being unpatentable over the references as applied to claim 4 above, and further in view of U.S. Patent No. 5,630,419 ("Ranalletta") and U.S. Patent No. 6,309,358 ("Okubo"). In rejecting these claims the Examiner contends "since whereas the former are silent as to sterilization of a connector portion remote from the transducer assembly, it would have been obvious in view of the latter col. 4 lines 38-62 or the Abstract respectively to sterilize the cable and connector portion which egresses away from the transducer assembly in analogous devices such as the ultrasound array catheters which are the latter's genre."

According to the above cited section of the Office Action, the Examiner does not even appear to contend that Ranalletta and Okubo teach or suggest, "wherein the housing has been sealed such that moisture cannot enter between the inner housing and the outer housing during sterilization of the probe assembly after use" as recited in claim 1. Therefore, Ranalletta and Okubo do not cure the deficiencies of Branigan et al. and/or Wedel et al. and Al-Ali et al. to reject claim 4. Therefore, claim 4 is patentably distinguishable over Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta and Okubo.

Since claim 7 depends from claim 4, claim 7 incorporates all the terms and limitations of claim 4 in addition to other limitations, which together further patentably distinguish claim 7 over the cited references. Therefore, Applicants request that the rejection of claim 7 be withdrawn and that this claim be allowed.

Claim 11 recites:

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A sterilizable connector comprising:

a connector housing which has been sealed to prevent moisture from entering it;

a multi-wire cable which is electrically coupled to a probe at a first end and coupled to the connector housing at a second end, said multi-wire cable having its second end sealed within the connector housing to prevent moisture from entering the sealing between the multi-wire cable and the connector housing; and

a plurality of electrical contacts formed on at least one surface of the sterilizable connector,

wherein the sterilizable connector can be connected to a mating connector of a medical equipment while the sterilizable connector remains sealed, said mating connector having a plurality of mating contacts formed thereon for electrical coupling with the electrical contacts of the sterilizable connector, and

wherein the sterilizable connector can be separated from the mating connector to be sterilized. (Emphasis Added)

According to Col. 4, lines 38-62 of Ranalletta cited by the Examiner, "[i]n order that the probe assembly can be effectively sterilized, the connector 16 is provided according to the invention with a sealing cap assembly 18, which may desirably be retained on the cable 14 by a flexible strap 20. By provision of the sealing cap 18, the entire probe assembly shown in FIG. 1 can be disposed in the sterilant liquid for extended periods of time without danger of damage to the connector's contact pins 22 . . ." As such, Ranalletta teaches placing a sealing cap over the contacts pins 22 for sealing purposes. Therefore, the connector of Ranalletta clearly cannot remain sealed when connecting to another connector.

Also, Okubo does not appear to teach or suggest "[a] sterilizable connector comprising: a connector housing which has been sealed to prevent moisture from entering it; a multi-wire cable which is electrically coupled to a probe at a first end and coupled to the connector housing at a second end, said multi-wire cable having its second end sealed within the connector housing to prevent moisture from entering the sealing between the multi-wire cable and the connector housing." Further, none of Branigan et al. and/or Wedel et al. and Al-Ali et al. together appear to teach or suggest all limitations of claim 11.

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Therefore, a *prima facie case* of obviousness cannot be established for claim 11 over Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta and Okubo. Therefore, Applicants request that the rejection of claim 11 be withdrawn and that it be allowed.

Since claims 12-15 depend, directly or indirectly, from claim 11, they each incorporate all the terms and limitations of claim 11 in additions to other limitations, which together further patentably distinguish these claims over the cited references. Therefore, Applicants request that the rejection of claims 12-15 be withdrawn and that these claims be allowed.

Claim 24 recites:

A connector assembly comprising:
a sterilizable connector comprising:

a connector housing which has been sealed to prevent moisture from entering it;

a multi-wire cable which is electrically coupled to a probe at a first end and coupled to the connector housing at a second end, said multi-wire cable having its second end sealed within the connector housing to prevent moisture from entering the sealing between the multi-wire cable and the connector housing;
and

a plurality of electrical contacts formed on at least one surface of the sterilizable connector;

a standard connector for connecting directly to a standard medical equipment connector of a medical equipment;

a mating connector for electrically coupling the sterilizable connector to the standard connector while the sterilizable connector remains sealed, said mating connector having a plurality of mating contacts formed thereon for electrical coupling with the electrical contacts of the sterilizable connector,

wherein the sterilizable connector can be separated from the standard connector and the mating connector to be sterilized. (Emphasis Added)

For at least the reasons that are substantially the same as reasons given above in reference to claim 11, claim 24 is patentably distinguishable over Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta and Okubo. Therefore, Applicants request that the rejection of claim 24 be withdrawn and that this claim be allowed.

Since claims 25-29 depend, directly or indirectly, from claim 24, they each incorporate all the terms and limitations of claim 24 in addition to other limitations, which together further

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patentably distinguish these claims over the cited references. Therefore, Applicants request that the rejection of claims 25-29 be withdrawn and that these claims be allowed.

Claim 30 recites:

A medical ultrasound system comprising:

an ultrasound platform that can be used to generate, process and display ultrasound images;

a probe for taking ultrasound images;

a sterilizable connector comprising:

a connector housing which has been sealed to prevent moisture from entering it;

a multi-wire cable which is electrically coupled to the probe at a first end and coupled to the connector housing at a second end, said multi-wire cable having its second end sealed with the connector housing to prevent moisture from entering the sealing between the multi-wire cable and the connector housing; and

a plurality of electrical contacts formed on at least one surface of the sterilizable connector;

a standard connector for connecting directly to the ultrasound platform;

a mating connector for electrically coupling the sterilizable connector to the standard connector while the sterilizable connector remains sealed, said mating connector having a plurality of mating contacts formed thereon for electrical coupling with the electrical contacts of the sterilizable connector,

wherein the sterilizable connector can be separated from the standard connector and the mating connector, such that the probe and the sterilizable connector can be sterilized. (Emphasis Added)

For at least the reasons that are substantially the same as those given above in reference to claim 11, claim 30 is patentably distinguishable over Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta and Okubo. Therefore, Applicants request that the rejection of claim 30 be withdrawn and that this claim be allowed.

Since claims 31-33 depend, directly or indirectly, from claim 30, they each incorporate all the terms and limitations of claim 30 in addition to other limitations, which together further patentably distinguish these claims over the cited references. Therefore, Applicants request that the rejection of claims 31-33 be withdrawn and that these claims be allowed.

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VII. Rejection of Claim 8 under 35 U.S.C. § 103(a)

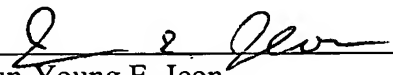
Claim 8 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the references as applied to claim 7 above, and further in view of U.S. Patent No. 4,407,295 ("Steuer et al."). Steuer et al. is being cited here for the proposition that it discloses "wrist attachment." As such, Steuer et al. does not cure the deficiencies of Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta and Okubo to reject claim 7. Therefore, claim 7 is patentably distinguishable over Branigan et al. and/or Wedel et al., Al-Ali et al., Ranalletta, Okubo and Steuer et al.

Since claim 8 depends from claim 7, claim 8 incorporates all the terms and limitations of claim 7 in addition to other limitations, which together further patentably distinguish claim 8 over the cited references. Therefore, Applicants request that the rejection of claim 8 be withdrawn and that this claim be allowed.

VIII. Concluding Remarks

In view of the foregoing amendments and remarks, Applicants earnestly solicit an early issuance of a Notice of Allowance. If there are any remaining issues that can be addressed over the telephone, the Examiner is cordially invited to call Applicants' attorney at the number listed below.

Respectfully submitted,
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